

ABSTRACT

HYDROGEN FUELLED HYBRID POWERTRAIN AND VEHICLE

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A hydrogen-powered hybrid powertrain system includes a hydrogen-fuelled internal combustion engine operating at a lean air/fuel mixture, and a supercharger for boosting a primary drive torque produced by the engine primarily over a high operating speed range. An electric motor/generator generates a secondary drive torque for the vehicle, such that the secondary drive torque complements the boosted primary drive torque over at least a low operating speed range of the powertrain. A disconnect clutch disposed between the engine and the motor/generator engages and disengages the engine from the motor/generator, and serves to transfer the boosted primary driver torque through the motor/generator and to a power transmission system. The input at the power transmission is thus a combination of the boosted primary drive torque and the secondary drive torque having an enhanced torque characteristic over at least the low operating speed range.

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